Calendar No. 139

102D CONGRESS *1st Session*	SENATE	REPORT 102-93

EMERGING TELECOMMUNICATIONS TECHNOLOGIES ACT OF 1991

Mr. HOLLINGS, from the Committee on Commerce, Science, and Transportation, submitted the following

REPORT

OF THE

SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ON

S. 218

JUNE 28 (legislative day, JUNE 11), 1991.—Ordered to be printed

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Mr. HOLLINGS, from the Committee on Commerce, Science, and Transportation, submitted the following

REPORT

[To accompany S. 218]

The Committee on Commerce, Science, and Transportation, to which was referred the bill (S. 218) to require the Secretary of Commerce to make additional frequencies available for commercial assignment in order to promote the development and use of new telecommunications technologies, and for other purposes, having considered the same, reports favorably thereon with amendments and recommends that the bill as amended do pass.

PURPOSE

The purpose of the bill is to increase the amount of the radiofrequency spectrum available for new communications technologies.

BACKGROUND AND NEEDS

I. BACKGROUND

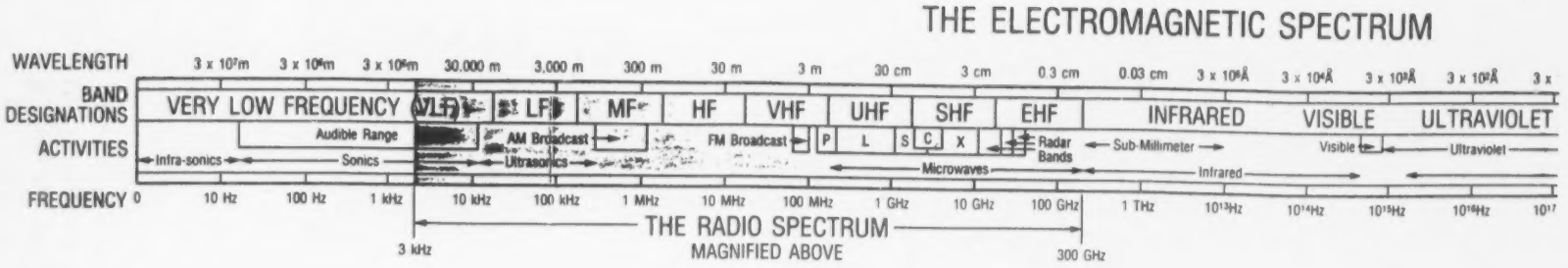
A. What is the Radiofrequency Spectrum?

The "radiofrequency spectrum" refers to that portion of the electromagnetic spectrum that can be used to convey messages from one point to another.

Electromagnetic radiation, or electricity, is a form of energy produced by the oscillation of subatomic particles traveling at the speed of light. The number of times per second that a radio wave undergoes a complete cycle of oscillation is called its frequency, which is measured in units called hertz. A wave traveling at 1,000

cycles per second is measured at 1 kilohertz (kHz); 1,000 kilohertz is a megahertz (MHz); and 1,000 megahertz is a gigahertz (GHz).

The portion of the electromagnetic spectrum that is used for communications is called the radio spectrum. The spectrum lies between 10 kHz and 300 GHz and is commonly divided into several frequency bands that are shown on the following chart.


THE ELECTROMAGNETIC SPECTRUM
WAVELENGTH
3 x 10⁷m
3 x 10⁶m
3 x 10⁵m
30,000 m
3,000 m
300 m
30 m
3 m
30 cm
3 cm
0.3 cm
0.03 cm
3 x 10⁴Å
3 x 10³Å
3 x 10²Å
3 x
BAND DESIGNATIONS
VERY LOW FREQUENCY (VLF)
LF
MF
HF
VHF
UHF
SHF
EHF
INFRARED
VISIBLE
ULTRAVIOLET
ACTIVITIES
Audible Range
AM Broadcast
FM Broadcast
P
L
S
C
X
Radar Bands
Sub-Millimeter
Visible
Ultraviolet
Infra-sonics
Sonics
Ultrasonics
Microwaves
Infrared
FREQUENCY
0
10 Hz
100 Hz
1 kHz
10 kHz
100 kHz
1 MHz
10 MHz
100 MHz
1 GHz
10 GHz
100 GHz
1 THz
10¹³Hz
10¹⁴Hz
10¹⁵Hz
10¹⁶Hz
10¹⁷
THE RADIO SPECTRUM
MAGNIFIED ABOVE
3 kHz
300 GHz

B. Some Characteristics of the Radiofrequency Band

In general, the lower the frequency, the farther the wave can travel. Very low frequency waves, for instance, can penetrate the atmosphere, the earth, and the seas, and are thus used for communication with submarines. The medium frequency signals, such as those used for AM broadcasting, often reflect off the ionosphere at night, causing the signal to radiate over vast distances. These transmissions can cause interference with other broadcast signals. As a result, many AM stations must reduce their power at night. The higher frequencies do not carry as far as the lower frequencies. Thus, the higher the frequency, the more power is necessary to transmit the signal the same distance. At 30 MHz, transmissions still can be made beyond the horizon, but as the frequency increases, transmission becomes limited to line of sight.

The lower frequencies can travel farther but are more susceptible to noise from natural and human causes. The sun, the stars, lightning, and equipment are all sources of noise. Thus, even though it can be more expensive to transmit at higher frequencies over distances, the signal is more likely to be received clearly.

C. Trends in the Use of the Radiofrequency Spectrum

Three significant trends mark the development of radio technology—the movement to higher frequencies, the reduction in channel size, and the movement to digital transmission.

In general, the cost of radio transmitters increases with both frequency and power. For these reasons, the first commercial application of a higher frequency is usually for system applications that carry traffic in bulk so as to limit the number of pieces of equipment that are needed. When the technology progresses and the cost of the devices is reduced, other system applications for that frequency are found.

As technological advances reduce the cost of the equipment, higher frequencies become more useful for consumer applications. For instance, prior to World War II, the usable portion of the spectrum was limited to the portion between 10 kHz and 300 MHz. Frequencies above 1 GHz were later allocated for satellite services. Today, however, there is increasing commercial interest in the frequencies between 1 GHz and 5 GHz for consumer services because the costs of equipment needed to operate in that band have been reduced.

Advances in technology have gradually allowed a reduction in channel spacing in the land mobile service from 120 kHz to 60 kHz, and then a reduction to 30 kHz, 25 kHz, or 20 kHz depending on the frequency band. This has allowed the same bandwidth to be used four times as efficiently.

Until a few years ago, almost all transmissions were made using analog waves. These waves, however, often picked up noise and other distortions along the way. Use of digital transmission, whereby signals are represented by "0"s and "1"s instead of waves, vastly improves the integrity of the signal. Although digital transmission usually requires greater bandwidth, the improved signal quality has made digital transmission increasingly popular. In ad-

dition, digital transmission can allow greater flexibility and allow additional features to be added to the signal.

D. The Frequency Allocation Process

1. International

Internationally, the radio spectrum is allocated by the International Telecommunications Union (ITU), which establishes general allocations for fixed, mobile, broadcast, and satellite services. The ITU holds world and regional international conferences every few years to consider new frequency allocation issues. These conferences, which operate by consensus on a one-nation, one-vote basis, agree upon an International Table of Frequency Allocations and issue Radio Regulations. The next world conference, to consider revised allocations for mobile services, is the Mobile World Administrative Radio Conference (Mobile WARC) to be held in Barcelona, Spain, in 1992.

2. Domestic

The Federal Communications Commission (FCC) administers the allocation and use of the spectrum by all non-Federal users. These users include the commercial sector and local, State, and county government users. The National Telecommunications Information Administration (NTIA) within the Department of Commerce (DOC) is responsible for supervising the use of the spectrum by Federal Government users, including the Department of Defense (DOD).

a. FCC Jurisdiction and Procedures

Concern over the increasing frequency use and interference after World War I led Congress to pass first the Radio Act of 1927 and then the Communications Act of 1934 (the 1934 Act). The FCC was given responsibility for allocating frequencies to particular uses and issuing licenses to individual entities to operate over the airwaves. The FCC's decisionmaking process is open to public participation and court review and is subject to the rulemaking requirements of title 5, U.S.C. (the Administrative Procedures Act).

The FCC is responsible for (1) allocating, (2) allotting, and (3) assigning the frequencies. Spectrum allocation involves setting aside bands or blocks of freqencies for use of particular radio services. For instance, spectrum allocation involves deciding whether a particular block of frequencies is to be used for fixed, land mobile, or broadcasting services. Spectrum allotment involves deciding which group of users will use which subset of frequencies within a block allocation. For instance, a block of land mobile spectrum may be divided among police or fire safety users, taxicabs, and cellular telephone users. Finally, spectrum assignment involves issuing licenses to particular individuals or entities to operate over a specific frequency band in a particular part of the country. For instance, determining which applicant among several applicants can receive a license to operate a radio broadcast station in town X at frequency Y is an assignment.

b. NTIA Jurisdiction and Procedures

The 1934 Act gives the President authority over the control and regulation of Federal use of the spectrum. In 1978, the President delegated this authority to DOC and subsequently to NTIA. NTIA and the FCC jointly develop a "National Table of Frequency Allocations." In this table, some bands are designated for exclusive use by the Federal Government, while others are designated for exclusive use by the non-Federal sector. Most bands are shared, however.

NTIA has jurisdiction over approximately 40 percent of the frequencies below 5 GHz. About 13 percent of the frequencies below 5 GHz are allocated exclusively to the Federal Government. This figure includes a number of frequencies on the low end of the spectrum that are not commercially useful. In the most valuable bands, the Federal Government has exclusive access to a higher percentage of frequencies. For instance, about 28 percent of the frequencies between 3 MHz and GHz are exclusively allocated to the Federal Government. About 33 percent of the frequencies in the high frequency band alone (between 3 MHz and 30 MHz) are allocated exclusively to the Federal Government.

NTIA administers Federal use of the spectrum through a consultative and consensus process, rather than through a public rulemaking process. NTIA chairs an Interdepartment Radio Advisory Committee (IRAC), comprised of all Federal Government agencies and users. The IRAC and its subcommittees provide advice to NTIA and resolve conflicts among its members. The IRAC's proceedings are not open or made available to the public, in part because of the national security implications of some of its decisions. The FCC has an advisory position on the IRAC.

II. NEED FOR ADDITIONAL FREQUENCIES

A. Spectrum Shortage

The United States is facing a shortage of spectrum for the commercial development of new technologies. At the Committee's April 11, 1991, hearing, FCC Chairman Alfred Sikes testified that the FCC strongly supports S. 218. The Chairman stated:

> Demand for radio spectrum needed to support the development of new communications services is rapidly growing * * * [W]ithout additional spectrum significant problems will arise.

He noted that throughout the 1980s, the FCC received scarcely half a dozen experimental license applications a year for new, innovative spectrum-based services. In the last year and one-half, however, the FCC has received approximately 60 such applications—about 10 times the past annual levels.

Traditionally, the United States has been very aggressive in allocating frequencies as new technologies have developed. This aggressiveness has propelled the United States into a world leadership position in spectrum-based technologies. In today's world, however, technology is continuing to advance, but the technology can find no room on the radiofrequency spectrum. The United States has become a victim of its own success, and thus the United States is in danger of losing its competitive advantage in new technologies.

B. Effect of this Spectrum Shortage on U.S. Industry

The shortage of spectrum affects a wide range of industries, including the broadcast, telephone, satellite, and private communications carrier industries. Radio broadcasters soon may want additional frequencies to allow them to transmit digital radio, producing sound quality as good as compact disks, and television broadcasters want additional frequencies for high definition television. Local government and public safety agencies also are suffering an acute shortage of spectrum, particularly in urban areas.

The spectrum shortage will have a particularly severe effect on mobile communications technologies, where technological innovation is occurring at a rapid pace. The FCC Chairman noted that mobile radio constitutes one of the best "leverage technologies," meaning that these new services can spur productivity and efficiency in all business sectors. For instance, trucking and shipping companies are looking for more spectrum to improve the efficiency of their transportation and delivery operations. Business executives need mobile services that will allow them to use phones, send, faxes, and connect with computer databases in cars, planes, and trains.

C. International Implications

Frequency allocations are becoming increasingly important in the international communications arena. A recent article in Business Week noted that, according to ITU, as many new frequency assignments were recorded in the past decade as in all the previous 80 years of radio communications. The FCC Chairman testified as follows:

> Several of our leading international rivals—most notably Britain, France, and Japan—have identified mobile communications as a critical field. British, French, and Japanese frequency management authorities have made channels available to support their indigenous mobile communications companies. If we want to maintain our relative competitiveness, we need to take prompt action as well.

For example, the British Government recently has allocated 200 MHz of spectrum to new land mobile communications technologies. One of these new technologies, called Personal Communications Network, or PCN, could provide mobile service similar to cellular telephone service at much reduced rates and using smaller and more inexpensive hand-held phones. The Conference of European Post, Telephone and Telegraph Ministries (PTTs) has recommended that 20 MHz be made available in Europe for Digital European Cordless Telephones (DECT). Many of these allocations will require the military to vacate some spectrum. The Japanese Government recently announced a large allocation of frequencies for new commercial applications. Many observers believe that, unless the United States acts quickly to allow for the introduction of these new technologies, foreign manufacturers may gain an advantage in designing and developing the equipment to operate over these frequencies.

D. Reasons for the Frequency Shortage

It is very difficult to find room for these new services in the frequency bands that are already allocated. Once a frequency has been allocated, it is very difficult to reallocate it to a different use. Existing users often have made substantial investments in equipment that might become obsolete if the equipment no longer could operate over the frequencies to which they were accustomed.

In addition, measurement of actual frequency use, to determine how efficiently a frequency is being used, is very difficult. Many users operate intermittently, making any "snapshot" measurement inaccurate if the use is not occurring at that particular time. Many bands are allocated for emergency purposes and thus must remain available even though not heavily used. Further, a frequency that is lightly used in one region of the country may be heavily used in another region. As a result, it is difficult to know which frequencies are not being used efficiently and which bands can be shared with new technologies.

E. Reasons for Reallocating Spectrum from the Federal Government

Many observers believe that new frequencies only can be found for new technologies by reallocating frequencies currently assigned to the Federal Government. As previously indicated, the frequencies controlled by the Federal Government are administered by NTIA. The Federal Government uses about 13 percent of the spectrum exclusively, and shares about 40 percent of the remaining specturm with the commercial sector.

Many observers believe that the Federal Government does not use its frequencies efficiently. For instance, DOD testified that it recently implemented "trunking" for private land mobile services, through the technology for "trunking" was available over 10 year ago. An Institute of Electrical and Electronics Engineers (IEEE) witness testified before the House Energy and Commerce Telecommunications Subcommittee that, in the 7 and 8 GHz band, the Government utilization is estimated to be less than one-tenth of that of the commercial sector. These commercial users also allege that the Federal Government could rely more heavily on the services of commercial operators rather than reserving spectrum solely for itself. For instance, the Federal Emergency Management Agency (FEMA) used commercial transmission facilities in responding to Hurricane Hugo and the San Francisco earthquake.

Most observers, including the administration, believe that the Federal Government can relinquish 300 MHz of frequencies without suffering meaningful degradation in the essential services provided by the Federal Government. The administration has proposed a bill, for instance, which sets a goal of 200 MHz to be transferred to the commercial sector. In testimony before the Communications Subcommittee, Janice Obuchowski, the Administrator of NTIA and the President's primary advisor on communications policy, agreed that the "200" number was reasonable.

F. Protections for Federal Government Services

The reported bill recognizes, however, that the Federal Government provides many essential services that must not be disturbed

by this legislation. The bill thus includes an elaborate process for identifying the 200 MHz to be transferred in order to give the relevant Government agencies and the private sector full opportunity to present their views.

The reported bill requires the Secretary of Commerce (Secretary) to issue a preliminary report tentatively identifying the frequencies to be transferred after 1 year. An advisory committee then comments on the tentative findings of the Secretary. The Secretary then issues a final report 2 years from the date of enactment. In making these recommendations, the Secretary must take into account the costs faced by Government agencies to transfer their operations to new frequencies, the ability of existing Federal Government users to share frequencies, and other factors. The President then has the authority to review the report and to substitute for any frequencies that are needed for national security and other important purposes. Within 3½ years from the date of enactment the FCC sets forth a plan for allocating those frequencies over the next 15 years.

G. Spectrum Auctions

The administration believes that this bill should be amended to require the use of auctions to award some licenses to use the spectrum. The administration's proposal would require that all new assignments of spectrum, with certain exceptions, be awarded to the person bidding the most in a competitive bidding process. The Chairman of the FCC and the Administrator of NTIA both testified at the Committee hearing on S. 218 in support of the use of auctions.

On March 6, 1991, Secretary of Commerce Robert Mosbacher sent to Vice President Dan Quayle, in his role as President of the Senate, a draft bill that made several changes to S. 218 and included provisions to require auctions. The President included a provision in his fiscal year 1992 budget estimating that auctioning 30 MHz of spectrum would raise $2.5 billion over 3 years. As of the time the Committee considered S. 218 in executive session, however, no Member of the Senate had introduced the administration's bill, and no amendment concerning spectrum auctions was offered at the executive session at which the Committee considered the bill. After S. 218 was ordered reported, Senator Stevens filed a substitute amendment to the bill on June 21, 1991, that authorizes the use of auctions.

Legislative History

Senator Inouye introduced S. 218 on January 15, 1991. Senators Hollings, Gore, and Lautenberg are original cosponsors. Senator Lugar was added as a cosponsor on January 30, 1991. The Communications Subcommittee held a hearing on the bill on April 11, 1991. Witnesses included the Chairman of the FCC, the Administrator of NTIA, and several industry witnesses. On May 14, 1991, in open executive session, the Committee ordered S. 218 reported with a few clarifying amendments offered by Senator Inouye, without objection by voice vote and subject to technical amendment.

Senator Inouye introduced a similar version of this bill in the Senate on July 25, 1990, in the 101st Congress (S. 2904). The Committee held a hearing on that bill on August 2, 1990, but did not have an executive session between that hearing and the end of the 101st Congress.

Also in the 101st Congress, the House passed a similar version of this bill. In the 102d Congress, Congressmen Dingell and Markey introduced H.R. 531 on January 15, 1991. The House Telecommunications Subcommittee reported the bill favorably on May 2, 1991, with minor amendments. The full House Energy and Commerce Committee ordered the bill reported with minor amendments on May 21, 1991. Congressmen Ritter, Oxley, and Tauzin introduced the administration's bill, H.R. 1407, in the House on March 12, 1991.

Summary of Major Provisions

Under the bill as reported, the Administrator of NTIA and the Chairman of the FCC must meet at least biannually to conduct joint spectrum planning and issue annual reports to Congress.

In addition, the Secretary shall submit to the President and Congress within 2 years of enactment a report identifying, and recommending for reallocation, 200 MHz of frequencies below 5 GHz that are licensed for use by the Federal Government, that are not required for the present or identifiable future needs of the Federal Government, that may be made available for use by non-Federal users, that will not result in excessive costs to the Federal Government or excessive loss of public services or benefits, and that are most likely to have the greatest potential for commercial uses and public benefits.

No more than 50 percent of these frequencies may be partially retained by the Federal Government in certain geographic areas and shared with the commercial sector. In choosing the frequencies to be reallocated, the Secretary shall not recommend for reallocation any frequencies currently used by the Federal power agencies.

The Secretary is to assume that the reallocated frequencies will be assigned by the FCC over 15 years and shall consider the activities of foreign governments in making such frequencies available.

The Secretary shall prepare and submit to Congress a preliminary report identifying the reallocable frequencies within 12 months of enactment. The Secretary shall convene an advisory committee to review the frequencies identified in the report and advise the Secretary with respect to the final report. The advisory committee shall be composed of the Chairman of the FCC, the Administrator of NTIA, one other Federal Government representative, and representatives of U.S. manufacturers of telecommunications equipment, commercial carriers, other users of the spectrum, and other interested members of the public. After receiving comments from this advisory committee, the Secretary shall issue a final report within 2 years after enactment making its decision as to those frequencies to be reallocated.

The advisory committee also shall report, within 3 years after enactment, to Congress on recommendations for reforming the spectrum allocation process.

Within 6 months after receiving the Secretary's final report, the President shall implement the report, except that the President may substitute an alternative frequency or band of frequencies if reassignment of the frequencies identified in the report would jeopardize seriously national defense interests or the public health or safety of the United States, if the frequencies are uniquely suited to meeting important governmental needs, of if reassignment will result in excessive costs to the Federal Government.

Not later than 1 year after receiving notification of the President's action, the FCC shall submit a plan for distributing the reallocated frequencies. The FCC shall not propose the immediate distribution of all frequencies but shall reserve a significant portion for distribution more than 10 years after the plan's submission. The FCC shall ensure the availability of frequencies for new technologies and services.

ESTIMATED COSTS

In accordance with paragraph 11(a) of rule XXVI of the Standing Rules of the Senate and section 403 of the Congressional Budget Act of 1974, the Committee provides the following cost estimate, prepared by the Congressional Budget Office:

JUNE 20, 1991.

Hon. ERNEST F. HOLLINGS,
Chairman, Committee on Commerce, Science, and Transportation, U.S. Senate, Washington, DC.

DEAR MR. CHAIRMAN: The Congressional Budget Office has reviewed S. 218, the Emerging Telecommunications Technologies Act of 1991, as ordered reported by the Senate Committee on Commerce, Science, and Transportation on May 14, 1991. The cost to federal agencies of implementing this bill is highly uncertain, but it could total hundreds of millions of dollars over the next 15 years, mostly to replace communications equipment so that agencies could use different frequencies on the electromagnetic spectrum. Developing and implementing the necessary plans would cost about $5 million over the 1992–1996 period, assuming appropriation of the necessary amounts.

Bill Purpose

S. 218 would establish procedures under which the President would reallocate segments of the electromagnetic spectrum from federal to nonfederal users. It would require the Department of Commerce (DOC) and the Federal Communications Commission (FCC) to recommend for reallocation bands of frequencies that total at least 200 megahertz located below 5 gigahertz. Under this bill, the bands selected for reallocation must be made available to nonfederal users over the next 15 years. The selected bands must also satisfy criteria regarding federal and public needs, costs, and benefits.

The DOC must submit its preliminary recommendations within one year after the bill is enacted, and a final report within two years. The President would implement the DOC plan, initiating the withdrawal of federal assignments within six months after the final report is completed. The FCC would devise and implement a

plan for distributing the available frequencies to nonfederal users over a 10-year period. S. 218 would formalize coordination between DOC and the FCC on spectrum planning, requiring the two agencies to meet at least biannually and to submit a joint annual report to the Congress. DOC must also convene an advisory committee to advise the Secretary on which bands of frequencies should be reallocated and on reforming procedures for allocating the spectrum between federal and nonfederal users.

Budgetary Impact

Enactment of this bill would increase the government's costs of administering and using the electromagnetic spectrum.

Cost of Spectrum Management. Based on information from the National Telecommunications and Information Administration within DOC and the FCC, CBO estimates that federal agencies would spend a total of $5 million from 1992 through 1996 to support the analyses, plans, and actions required by the bill. Outlays would increase by $0.8 million in 1992 as agency planning begins; peak at $1.2 million in 1994 as the DOC and advisory committee reports are completed and the FCC's plan is drawn up; and then decline to $0.5 million by 1996 as agencies focus on implementation.

Although most of these costs would be borne by DOC and the FCC, the reallocation plans would involve all agencies that use the spectrum, including the Departments of Agriculture, Commerce, Defense, Energy, Health and Human Services, the Interior, Justice, Transportation, Treasury, and Veterans Affairs, as well as the National Aeronautics and Space Administration (NASA), the General Services Administration and the Postal Service.

This estimate does not include the cost to the FCC of licensing new users, which cannot be estimated until the Commission determines how and when the spectrum would be reallocated. These costs, and associated receipts from licensing fees, are unlikely to be significant until after 1995, because the FCC's plan for distributing the reallocation frequency bands would not be due until 42 months after enactment.

Costs of Spectrum Reallocation. Depending on the recommendations and actions of the DOC and the FCC, a variety of federal agencies to which spectrum frequencies are currently assigned could incur substantial costs over a number of years if the frequencies that they use for their operations were reallocated under this bill. Costs would consist primarily of new property and equipment necessary to modify existing operations and to operate on different frequencies. Many federal agencies have equipment specifically engineered for a particular band of the spectrum, which they would have to replace with new equipment or with substitute service. For example, tracking, telemetry, and control systems for many satellite communications systems have such spectrum-dependent equipment at each site.

It is not impossible to estimate these costs precisely because until DOC finishes the reallocation plan, we cannot determine which frequencies would satisfy the criteria in the bill, or the extent to which equipment would be replaced during this period under current federal and international guidelines.

Though limited, existing data suggest that the government's current investment in spectrum-dependent equipment is concentrated in certain agencies and bands. For example, nondefense agencies have invested at least $38 billion, of which $30 billion has been spent by NASA and $6.5 billion by the Federal Aviation Administration. Virtually all of NASA's equipment is designed to use bands spanning less than 200 megahertz. Similar data are not available for the Department of Defense, but its investment could match the nondefense total.

The costs to modify existing operations would depend on the affected agencies and the equipment and facilities they would have to replace or relocate. These could vary widely depending on the specific frequencies chosen for relocation. The federal investment ranges from hundreds of millions of dollars per megahertz to only a few million dollars per megahertz. Some bands host thousands of federal frequencies, others less than 50. For the purpose of this estimate, we assume that the criteria in S. 218 would lead DOC to recommend gradually withdrawing from bands where the expense and disruption to the government would be relatively low.

Even if the timing of the reassignments largely coincides with agencies' scheduled replacement cycle, we would expect some incremental costs to be incurred as users are shifted to newer, and probably higher, frequencies. Government-wide, the shift of frequencies is likely to cost hundreds of millions of dollars over the next 15 years. Most of these expenses would be incurred after the President withdraws federal assignments in 1994.

S. 218 would authorize such sums as may be necessary for the government to reclaim any frequencies that were allocated for nonfederal use as a result of this bill. These costs cannot be estimated at this time, and would likely be incurred after 1996.

The Budget Enforcement Act of 1990 sets up pay-as-you-go procedures for legislation affecting direct spending or receipts through 1995. The only potential pay-as-you-go impact of this bill would involve the receipts generated by the FCC's licensing of the reallocated portions of the spectrum. CBO estimates that such receipts would not be significant until after 1995.

CBO estimates that enactment of this bill would result in no cost to state or local governments.

If you wish further details on this estimate, we will be pleased to provide them. The CBO staff contact is Marjorie Miller, who can be reached at 226–2860.

Sincerely,

ROBERT D. REISCHAUER,
Director.

REGULATORY IMPACT STATEMENT

In accordance with paragraph 11(b) of rule XXVI of the Standing Rules of the Senate, the Committee provides the following evaluation of the regulatory impact of the legislation, as reported.

NUMBER OF PERSONS COVERED

This bill requires the transfer of 200 MHz of frequencies currently assigned for use by the Federal Government to the FCC. Some

Federal users may be required to shift their use to other Federal frequencies. This shift should not affect Federal employees except to the extent that new equipment and training will be required to operate over the new frequencies. This bill does not anticipate that any Federal services, or the Federal workforce, will be reduced as a result of this legislation.

ECONOMIC IMPACT

This bill should bring significant economic benefits to the United States. The bill will free 200 MHz of frequencies that are currently not used for any commercial or economic purpose. The bill is founded on the premise that the FCC will allocate a significant portion of these frequencies for new, commercial technologies. These new technologies will provide new services to the public. They should improve the economic efficiency of the American economy. The growth of these technologies also should promote new industries that themselves will create jobs and add to economic growth. The availability of these frequencies also will stimulate greater research and development by those who currently are discouraged from developing new technologies by the lack of spectrum.

PRIVACY

This bill is not expected to have any impact on the personal privacy of any individuals.

PAPERWORK

The reported bill will require DOC, several Federal Government agencies that use the Federal Government spectrum, and the FCC to generate some amount of additional paperwork as they consider which frequencies should be transferred and how they should be allocated. For instance, DOC must issue within 1 year after date of enactment a preliminary report identifying the frequencies to be transferred. The Secretary then must convene an advisory committee that will comment on that initial report. The Secretary then is to issue a final report 1 year later.

The FCC will incur additional paperwork responsibilities in order to carry out the terms of the bill. The FCC must issue a plan for allocating these frequencies within 3½ years after the bill is enacted. The FCC must then engage in rulemaking proceedings to allocate specific frequency bands in fulfillment of this plan. Both of these tasks will involve seeking notice and comment from the public and issuing several reports and orders.

These additional paperwork responsibilities, however, are essential to fulfilling the purposes of the bill. All the government agencies, the industry, and the public must have a full opportunity to comment on the decisions of the Secretary and the FCC to ensure that Federal Government services do not suffer severe degradation and to ensure that the frequencies chosen for reallocation are best suited for the commercial development of new technologies. Public participation in this process is essential to securing the objectives of this bill.

The bill imposes no additional paperwork burdens on users of the spectrum other than the paperwork that the FCC presently requires.

SECTION-BY-SECTION ANALYSIS

SECTION 1—SHORT TITLE

Section 1 states that the short title of the reported bill is the "Emerging Telecommunciations Technologies Act of 1991."

SECTION 2—FINDINGS

Section 2 states the findings of the reported bill. Among the principal findings are:

—that the Federal Government uses approximately 40 percent of the electromagnetic spectrum;

—that many of these frequencies are underutilized by Federal Government licensees;

—that many Federal Government licensees could use their frequencies more efficiently and could use the services of commercial carriers;

—that the scarcity of frequencies can impede the commercialization of new technologies, can prevent some local government and public safety agencies from providing emergency services, and can hamper the international competitiveness of the U.S. economy; and

—that the Secretary, the President, and the FCC should take steps to correct the frequency shortage problem.

SECTION 3—NATIONAL SPECTRUM PLANNING

Section 3 provides for national spectrum planning by the Administrator of NTIA and the Chairman of the FCC. They shall meet at least biannually to consider future spectrum requirements for public and private uses, allocation actions that may be necessary to accommodate those uses, and means of promoting spectrum efficiency, including spectrum sharing. The NTIA Administrator and the FCC Chairman are also required to submit a joint annual report to Congress concerning their joint spectrum planning activities and their recommendations for action.

SECTION 4—IDENTIFICATION OF REALLOCABLE FREQUENCIES

Section 4 specifies the procedures to be used in identifying the 200 MHz of spectrum ot be transferred to the FCC. Subsections (a) and (b) state that the Secretary shall submit to the President and Congress within 2 years a report identifying, and recommending for reallocation, 200 MHz of frequencies below 5 GHz that: (1) are used by the Federal Government; (2) are not required for the present or identifiable future needs of the Federal Government; (3) may be made available for use by non-Federal users at any point over the next 15 years; (4) will not result in excessive costs to the Federal Government, or excessive loss of public services or benefits, in relation to the benefits to be obtained from use by non-Federal users; and (5) if the report identifies frequency bands spanning more than 200 MHz, the report shall recommend for reallocation

those bands that are most likely to have the greatest potential for productive uses and public benefits.

Under subsection (b), no more than 50 percent of the frequencies identified by the Secretary's report may be partially retained by the Federal Government in certain geographic areas and shared with the commercial sector. Such sharing only shall be permitted if the potential Federal use is substantially less than the potential non-Federal use and the sharing occurs under coordination procedures established by the FCC.

Subsection (c) specifies some of the criteria for identifying the frequencies to be reallocated. Under paragraph (1), the Secretary, in determining which frequencies are not required for Federal Government use, shall consider whether a service could be available from a commercial carrier, and shall seek to promote reliance on commercially available substitutes, frequency sharing, the development and use of new technologies, and use of communications systems that do not use the spectrum. The Secretary shall seek to avoid serious degradation of Federal Government services and operations and excessive costs to the Federal Government and users of Federal Government services.

Paragraph (2) states that, in determining whether frequencies can feasibly be made available, the Secretary shall assume that the FCC will license users of those frequencies over a 15-year period, assume reasonable rates of scientific progress and demand growth, determine the extent to which the reallocation of those frequencies will help to relieve frequency scarcity for non-Federal use, seek to include frequencies which can be used for new technologies, and consider the immediate and recurring costs of reestablishing services displaced by the reallocation of spectrum.

Paragraph (3) states that, in comparing the costs of reallocating Federal Government frequencies to the benefits from use by non-Federal licensees, the Secretary shall consider the extent to which equipment is available that is capable of utilizing the band, the proximity of frequencies that are already assigned for commercial or other non-Federal use, and the activities of foreign governments in making frequencies available to support domestic manufacturers of equipment.

Paragraph (4) states that, in choosing the frequencies to be reallocated, the Secretary shall not recommend for withdrawal any frequencies currently used by the Federal power agencies, but may recommend sharing of these frequencies in geographically separate areas as long as no interference to the Federal power agency occurs.

Subsection (d) sets forth the procedures for identification of reallocable frequencies. The Secretary shall prepare and submit to Congress a preliminary report identifying the reallocable frequencies within 12 months of enactment. The Secretary shall convene an advisory committee which will review the frequencies identified in the report and advise the Secretary with respect to the final report. The final report of the Secretary shall include a timetable that recommends immediate and delayed effective dates for implementing the report.

The advsiory committee shall be composed of the Chairman of the FCC, the Administrator of NTIA, one other Federal Govern-

ment representative, and representatives of U.S. manufacturers of telecommunications equipment, commercial carriers, other users of the spectrum, and other interested members of the public. The advisory committee also shall report within 3 years to Congress with its recommendations for reforming the spectrum allocation process.

SECTION 5—WITHDRAWAL OF ASSIGNMENT TO FEDERAL GOVERNMENT STATIONS

Section 5 sets forth the procedures for the withdrawal of frequencies used by the Federal Government. Within 6 months after receiving the Secretary's final report, the President shall implement the report, except that the President may substitute an alternative frequency or band of frequencies if reassignment of the frequencies identified in the report would jeopardize seriously national defense interests or the public health or safety of the United States; if the frequencies are uniquely suited to meeting important governmental needs; or if the reassignment will result in excessive costs to the Federal Government in relation to the benefits of use by non-Federal licensees. The President may delay the withdrawal of certain frequencies beyond the proposed withdrawal date for certain reasons.

SECTION 6—DISTRIBUTION OF FREQUENCIES BY THE COMMISSION

Section 6 sets forth the procedures for the FCC to follow in distributing the frequencies reallocated under this bill. Not later than one year after receiving notification of the President's action, the FCC shall submit a plan for distributing the reallocated frequencies. The FCC shall not propose the immediate distribution of all frequencies but shall reserve a significant portion for distribution more than 10 years after the plan's submission. The FCC shall ensure the availability of frequencies for new technologies and services. The FCC shall continue to address the feasibility of reallocating portions of the spectrum from non-Federal uses to provide for more efficient spectrum use and shall continue to allocate bands of frequencies for specific uses in future rulemaking proceedings.

SECTION 7—AUTHORITY TO RECOVER REASSIGNED FREQUENCIES

Section 7 sets forth procedures for recovering reassigned frequencies. The President may recover reassigned frequencies as long as a timetable is established to accommodate an orderly transition for licensees to obtain new frequencies. The Federal Government must bear the costs of reclaiming frequencies, and such sums as are necessary are authorized for this purpose.

SECTION 8—DEFINITIONS

Section 8 sets forth several definitions of terms used in the bill.

CHANGES IN EXISTING LAW

In compliance with paragraph 12 of rule XXVI of the Standing Rules of the Senate, the Committee states that the bill as reported would make no change to existing law.

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